tary foods. With regard to giving a table for the needs of the baby, that is all bosh. A baby uses per pound according to thinness and fatness of the child. No one can make a table. All I tried to do is to call your attention to the fact that we have a definite measure for foods and for babies' needs and can approximate with better success by using these measures.

SURGICAL TREATMENT OF GASTROPTOSIS.

By J. HENRY BARBAT, M. D., San Francisco.

The first recorded operative procedure for the cure of gastroptosis was by Duret of Lille in 1894. The operation consisted in sewing the stomach to the anterior abdominal wall, and was done for an extreme case of gastroptosis. The result was excellent, but has not found favor with the majority of surgeons, on account of the fixation of a normally movable organ, a condition which in itself has sometimes necessitated operative measures for its relief. Similar operations, with slight modifications, were reported by Davis in 1897, and by Rovesing and Hartmann in 1899. Up to date, Rovesing has reported seventy-five cases, and claims good results in practically all of them, but I should still hesitate to sew the stomach to the abdominal wall when some other operation would restore it to its normal position without this abnormal fixation.

Beyea, on April 19, 1898, operated upon a patient with an extreme gastroptosis as follows: The abdomen having been opened in the median line, the gastro-hepatic and gastro-phrenic ligaments were exposed and three rows of interrupted silk sutures were placed from above downward, and from right to left through the gastro-hepatic and gastro-phrenic ligaments, shortening these ligaments and restoring the stomach to its normal position. In a personal letter, Dr. Beyea reports ten patients operated upon by himself in this manner, with excellent results in all cases.

Coffey has reported two cases in which he attached the great omentum to the abdominal wall, forming a sling or hammock for the stomach. This operation has the same objection as the one of Duret or Rovesing, and would undoubtedly leave a large percentage of patients having gastroptosis with pains and discomfort greater than that due to the original disease.

Gastroenterostomy, gastroduodenostomy, gastroplication, and combinations of these operations have been done many times for gastroptosis, with varying results.

Which is the best operation for gastroptosis? The operation best suited for any particular case depends entirely on the pathology present, and the surgeon must make an accurate diagnosis if he expects to cure the patient by an operation.

In simple cases of gastroptosis, in which the lower border of the stomach does not descend below the level of the umbilicus, and where there is no kinking of the pylorus or duodenum, operation is rarely indicated. The cases which *do* almost invariably require operation to cure the patient, are those in which the pylorus or duodenum is kinked or obstructed. If there is actual obstruction or stenosis at the pyloric outlet of the stomach, a gastroenterostomy or gastroduodenostomy must be done, or no relief will be obtained; on the contrary, if no real obstruction exists, and the pylorus is patulous, either of these operations is contraindicated, and will tend to increase rather than decrease the sufferings of the patient.

Gastropexy is the operation of choice in every case in which there is kinking of the pylorus or duodenum, and the method of Beyea or some slight modification of it, will undoubtedly give the largest number of satisfactory results. When there is extreme dilation of the stomach, it may be necessary, in addition to other operations, to do a gastroplication, but I believe that in the large majority of cases, if the proper operation is chosen, no tucking of the stomach will be necessary, because the subsequent treatment will usually restore the muscular tone and cause the stomach to contract to its normal size.

Improvement after operative procedures depends on whether the cause of the symptoms has been removed; and the success or failure of many of the operations which have been done to relieve the miseries of gastroptosis unquestionably hinged on the operator having, by accident or design, relieved the pyloric or duodenal kink or obstruction, which is undoubtedly the primary cause of the symptoms in gastroptosis.

Up to recently, I have been doing either gastroenterostomy or gastroduodenostomy for my cases of gastroptosis, but the results have not been uniformly good, and some of the patients still have some of their old symptoms. This I believe to be due to the fact that the wrong operation was chosen, and an extra opening made in a stomach in which the natural opening was sufficient. Had the angulation of the duodenum been relieved by placing the stomach in its normal position, and retaining it there, the food would be able to pass out at the proper time, the circulation of blood, and therefore the gastric secretions, improved, and gastromotor sufficiency established.

I now determine first whether the pylorus is patulous by pushing the finger, with a fold of the stomach over it, through the pyloric orifice. If it admits the tip of the index finger, there is no necessity of adding another opening, and the operation of choice is gastropexy. Usually Beyea's operation is chosen, but in a recent case the gastrohepatic omentum was so thin and porous, that I modified the operation slightly.

Following is a brief history of the case:

Mrs. W., aged 25 years (kindly referred to me by Dr. A. R. Fritchi for operation), had been suffering for the past three years with accumulation of gas in the stomach to such an extent that her life had become unbearable. She had had her appendix and one ovary removed without any perceptible relief; her stomach had been washed out and everything known to medical science had been tried, without any improvement in her condition. Dr. Fritchi had made several analyses of the stomach contents and

found that the total acidity never exceeded 15. The food was poorly chymified and mixed with tenacious mucus which showed a number of leucocytes, providing a mild degree of motor insufficiency.

With the patient horizontal, the lower border of the stomach could be outlined about one inch above the umbilicus, but with the patient erect the stomach became almost vertical. A stomach tube was passed and the stomach inflated with air. As the air passed in it could be heard gurgling through a small quantity of fluid which had been allowed to remain, and by palpation and auscultation the end of the tube was found to be two inches below and one inch to the left of the umbilicus. Percussion showed that the stomach lay almost entirely to the left of the median line. There was no apparent dilation, and the case was considered to be one of pure gastroptosis. The kidneys were not movable and the liver not displaced. It was decided to replace the stomach by operation.

When the abdomen was opened the stomach could easily be drawn entirely below the umbilicus, which produced a sharp kink at the junction of the superior and descending portions of the duodenum. The pylorus descended as low as the umbilicus, showing considerable elongation of the first portion of the duodenum, which was vertical instead of horizontal. The gastro-hepatic omentum was much lengthened, thinned and porous and had a free margin projecting for two inches below the lesser curvature. The weakened condition of the omentum prevented attempting Beyea's operation, and instead I placed six interrupted sutures of celluloid linen approximating the lesser curvature of the stomach with the upper border of the lesser omentum at its junction with the liver.

Care was taken to avoid including any of the blood vessels in the sutures; the stomach stitches included the serosa and muscularis and were placed just below the attachment of the lesser omentum. When the stitches were tied the entire gastro-hepatic omentum was puckered up and the lesser curvature of the stomach was in contact with the transverse fissure of the liver. Considerable traction was made on the stomach to test the strength of the sutures and they were found to hold perfectly. Since the operation the patient has not had any trouble of any description with her stomach, and passes gas through the rectum, a thing which she never did before the operation; but it is too soon yet to figure on the final result.

The post operative treatment consists in careful dieting, avoiding all foods which might ferment or tire the stomach, careful regulation of the bowels, and most important of all, the application of a supporting corset, to prevent undue traction on the ligaments of the stomach, and reduce to a minimum the venous congestion which is always found in the abdomens of patients suffering from ptosis of any of their abdominal viscera.

Closely associated with many cases of gastroptosis, and an important factor in its production, is hepatoptosis, for the relief of which several fixation operations have been devised. Rovesing in several cases went so far as to remove a portion of the left lobe by means of the angiotribe, in order to facilitate the operation on the stomach, and has supplemented his stomach fixation in some cases by attaching the liver to the abdominal wall. Suture of the round ligament to the anterior abdominal wall, thereby shortening the broad ligament, and using the round ligament as a sling, has a number of advocates. Passing sutures directly through the lower border of the liver and anterior abdominal wall is preferred by many operators.

I have had only five cases in which I have done fixation of the liver for descensus of that organ. Twice the ptosis was traumatic in origin, and the patients were completely relieved of their symptoms. In two other cases the livers were enlarged, the lower borders extending below the umbilicus. In these cases the patients were relieved considerably, but liver changes had taken place, and one died two years later from cirrhosis; the other is still living (one and a half years since operation), and is able to work with comparative comfort.

In these four patients I used sutures of heavy catgut through the liver substance and the abdominal fascia, and with gauze sponges rubbed the opposing surfaces of the liver and diaphragm until they bled.

My fifth case was one of general enteroptosis, in which the symptoms were referable to the stomach principally. I did a gastroenterostomy, and attempted to replace the liver, which had rotated so that the right lobe was almost directly under the left, by using the round ligament as a sling, but the result was not very satisfactory and I believe that the best operation would have been the through and through suture to the abdominal wall.

I shall not enter into the details of nephropexy, except to state that I believe Longyear's operation of nephrocolopexy is undoubtedly the best of any devised so far. The ligament between the lower pole of the kidney and the cecum is made use of to support both the kidney and the bowel, and in the cases in which I have used this method the results have been extremely satisfactory.

Discussion.

Dr. Boardman Reed, Los Angeles: I agree with Dr. Barbat in almost all he says, especially that when there is obstruction of the pylorus surgery is very necessary. I also agree in saying that in the simpler cases surgery is not generally necessary or advisable. I have found that the greater proportion of these cases are amenable to treatment. In the treatment of gastroptosis and enteroptosis, of which gastroptosis is a part, the most important part of the treatment is hygienic and in the direction of overcoming the fault. When the fault is obstruction, surgery must be resorted to. If the obstruction is only spasmodic closure of the pylorus from hyperacidity, whether organic acid or HCl excess, there must be a correction of that cause and removal. Hyperacidity must be cured. This is by far the most frequent cause of gastroptosis. Other causes are over-eating and over-drinking. People are apt to eat and drink too much, and with eating too much, overloading the stomach and want of exercise, the abdominal walls become weakened and finally the gastric walls become weak and the gastric contents are upset. Also the clothes constitute a very large factor in gastroptosis. In the correction of the fault the dress is a very important step. In my experience in the majority of cases when you have corrected these causes, put the patient on a diet and corrected the hyperacidity, using the mechanical curative means as massage and electricity to the abdominal walls, and the patient lying on the back with the hips raised kneading the abdomen during exhalation, you

can bring about a cure, or a gradual overcoming of this fault. An abdominal support is very important. For many patients the best support is adhesive plaster. The objection to it is that when it is worn night and day the abdomen cannot be massaged, but in working women who cannot afford to come to the office and need immediate relief the plaster is of great help. For those patients who come and have these treatments, some form of elastic belt and massage will be the biggest comfort, and remove the symptoms entirely. Operation is almost unnecessary. Another point is the fact that in many cases of chronic diarrhea, gastroptosis or enteroptosis will be found to be the cause, and sometimes both. These cases in which the patients have suffered for years are often cured when proper support is given the abdominal viscera.

Dr. Dudley Fulton, Los Angeles: I agree that gastroptosis is the trouble in the majority of cases. The only indication you ever have for operative procedure is where there is actual obstruction. We now know that the position of the stomach is of no clinical importance so long as stasis of food does not occur. That is rare except in those cases where there is a kink of the duodenum. However, before the operative procedure is instituted, the application of some mechanical support might do away with that kinking. Gastroptosis is usually congenital. It may be aggravated by improper clothes, but you will find it in those persons of narrow thorax and of certain formation. Persons with gastroptosis you will find hardly ever have any symptoms so long as they are properly nourished. Persons with vertical stomachs are predisposed to nervous troubles. The type of stomach trouble in gastroptosis is functional and always of the nervous type. The proper treatment is to make them fat and apply an abdominal belt. A person may have gastroptosis or enteroptosis but have no symptoms until she is subnourished.

Dr. W. F. B. Wakefield, San Francisco: I believe this trouble of gastroptosis is nearly always congenital and I believe that we should pay more attention to the physical shape of the children and be able to apply the preventive treatment along the lines of these different ptoses by developing the children along the physical lines so as to increase the narrow sub-costal angle that is characteristic of the physical state which accompanies these ptoses. I agree also that the symptoms produced by the condition are largely due to the conditions around the pylorus and that they can generally be relieved by treatment, mechanical and otherwise. I do not agree that surgery is not indicated in a fairly large percentage. I think that where the stomach has been out of place for a long time, where there is a certain narrowing of the pyloric opening or where there has been a long continued traction on the pylorus, where the first part of the duodenum is stretched out and the pyloric end elongated, that in these cases there is always a certain amount of residual food remaining in the stomach giving rise to gastro-intestinal symptoms. The only thing that will relieve this condition is to bring the stomach up to its proper position and hold it there constantly. This is best accomplished in the way that Dr. Barbat has suggested, and even in the cases where the gastro-hepatic omentum is extremely thin, we can make a competent ligament of it. In Philadelphia, I saw these cases treated and was convinced that the surgical operation held out great hopes of cure. Many cases have been in the hands of different doctors and we get the history of many forms of medical and mechanical treatment, though the patients are complete nervous wrecks and are finally cured by the operation Dr. Barbat has suggested. It should be brought out that gastroptosis is a more common condition than generally conceded and a number of cases of gastroptoses are passing through our hands every day, the real cause not recognized by us, and if I would urge anything, it would be that we should keep this condition more constantly in our minds and make an effort to outline the stomach.

Dr. W. A. Clark: I should like to take issue with the last speaker. I do not think that the surgeon is placed in an embarrassing place by the physician. Most of the cases, on the other hand, run the gauntlet of the medical profession and are sent as a last resort to the surgeon. They come to the surgeon as extreme cases. I think there is great value in exploratory incision. We know there is a gastroptosis present but do not know the cause and I think the knowledge gained by making the exploratory incision is very valuable.

Dr. Carl Krone, Oakland: We all know that the sphincter of the pylorus is a contractive ring and when there is atony the ring is larger and therefore the food stasis could not so well take place. The atony would favor the passing of food out of the stomach. I have had opportunity to see that a spastic condition of the stomach is accompanied by the acid condition. With an hour glass contraction of the stomach, we may wash out the upper part of the stomach and regain the water back clear and without acid reaction, yet after massage we may get more acid which shows that the spastic condition has been relieved by this performance. Therefore, I should think that if I understand Dr. Wakefield correctly, I should take issue with the theory of atony. I also think that stomach analysis is somewhat unreliable and more of a supplementary thing. I believe that we should give more attention to the analyses. We can very easily tell whether certain kinds of food will agree with a patient and have certain times of feeding. In that way we can make an accurate clinical diagnosis which is very frequently not achieved by a single stomach analysis. I believe that continued and repeated stomach analyses may hold in a similar way. I should not advise the doctor to send a patient right down to the surgeon, before he has made some good experiments with feeding. Rest in bed and egg nog without whiskey often adds weight to a patient.

Dr. Boardman Reed, Los Angeles: It has not been my experience that the patients go the round of the physicians and to the surgeon as the last resort. The work of the physician has not been fully recognized. Very few of these patients fail to be relieved by the proper mechanical means. I have seen patients who have never had their trouble recognized at all, the whole trouble depending upon the enteroptosis or gastroptosis, and that not recognized. Fully one-half of all women have some abdominal displacement. A valuable point is with regard to the value of supporting the abdominal viscera. I think a properly fitted support will generally hold up the viscera very well, and I think surgery should be resorted to only after a thorough trial of mechanical measures which prove curative in a great majority of cases.

Dr. Barbat, closing discussion: I expected to hear something with regard to the diagnosis of these cases. It has been my experience that at least twenty-five per cent of women have some ptoses, usually of the kidney and very often several of the other abdominal organs. The question of diagnosis is a very important one. As we have heard from the men who have had experience in this line, patients have gone the rounds and have been treated for everything but the trouble they really have. Probably the best means of diagnosis of ptoses is a physical examination. I will mention that examination of the gastric diaphragm by having the patient swallow an electric light is a most uncertain

performance. The people of today who are familiar with surgery prefer to have a simple operation and wear the corset for three or four weeks afterwards with practical cure, than to go to the doctor's office indefinitely. I think a clean surgical operation will cure more patients than medication. Another thing is the advantage of the corset over any other mechanical device that can be used. Many patients have abandoned the belt and taken up these corsets. With these corsets I have avoided operating in the last year upon at least seventy-five per cent of cases where the condition did not warrant operative procedure. The patients must wear the corsets faithfully. They must put them on before they get up in the morning and take them off after they have gotten into bed at night. If they get up in the night they must hold the abdomen so that no slacking of the organ will take place. The corset must be put on while the patient is in a reclining position.

A REPORT OF TWO CASES OF EPIDURAL ABSCESS OF OTITIC ORIGIN.*

By HILL HASTINGS, M. D., Los Angeles.

The following cases of epidural abscess are worthy of recording because of the sudden onset of serious symptoms of intracranial involvement; in one case, during a quiet convalescence from a mastoid operation; in the other case, during an acute suppurative otitis media without signs or symptoms of mastoiditis. The careful observation that was possible brought out some interesting points in connection with the origin of symptoms of an intradural nature, from an extradural collection of pus.

Case 1.—W. C. M. Male, age 33, was operated on by a confrere, in March, 1906, for acute suppurative otitis media with mastoditis of four weeks' duration (left side). A thorough mastoid operation was done. The findings were—Subperiosteal infection from a perforation near the mastoid tip; subcortical cells broken down into an abscess cavity, extending backward over the descending limb of the sinus; the bone covering the sinus was not necrosed. The sinus was purposely uncovered, and found normal except for slight congestion of its dural coat. The antrum was cleaned out without exposing the dura. The patient left the hospital in good condition. The perforation in the drum membrane healed; the mastoid wound was clean and filling in rapidly. A little bare bone in the aditus was felt and some discharge escaped from the middle ear into the mastoid wound. On June 13th a secondary operation was performed by the writer on account of the persistence of a mastoid fistula leading down to the bottom of the cavity at the aditus. The incus was found to be diseased and was removed. As there had been scanty mastoid discharge and no discharge from the ear canal, it was believed that the diseased incus had been the cause of the failure of the mastoid wound to heal. In other respects the patient's condition was normal. He had been attending to business for a month or more, wearing a patch behind the ear. He complained at times of a little facial neuralgia, from which he claimed to be an occasional sufferer. Except for the failure of the mastoid wound to completely heal and "except for some neuralgic pain," the condition was normal.

On July 5th, 1905, four and a half months after the mastoid operation, the neuralgic pains suddenly increased in severity, affecting the face, frontal regions and left side of the head. The history notes at this time are as follows: "He can not sleep; has been depressed for several days and has not felt 'just right,' that is, at times in general conversation he has felt a little bewildered; temperature 98.6 degrees; pulse 100; no hysterical tendency; no chills; no motor or sensory disturbances; reflexes normal; no nausea or vomiting; appetite fairly good; body well nourished. Tenderness on pressure is found at and around the supra and infra orbital foramina and in the temporal, parietal and mastoid regions of the affected side, especially marked at points here and there; no deep tenderness is apparent; no swelling of the mastoid region nor of the scalp in general. The mastoid wound is a clean, narrow, funnel-shapel opening leading to the region of the aditus. The ear canal is dry; the drum membrane is dull white and not perforated; the hearing in the affected ear has not changed since the mastoid operation (watch on contact); conversational voice at 10 feet; Weber towards the affected ear, and Rhine negative."

The physical signs were of no moment, but the history was most disquieting, especially the intensity of the neuralgic pains, to which, heretofore, not much attention had been paid. The following day the patient returned in bad condition. He had suffered all night from intense pain in the head. He was pale and weak and markedly dull. He spoke in a low, drowsy voice. He was feverish, 101.6 degrees. No chills, nausea or vomiting. No general motor or sensory disturbances were found. The tenderness of the side of the head noticed on the previous day had increased and was acute on the slightest touch. No choking of the disk on either side was apparent. The patient was sent to the hospital and Dr. H. G. Brainerd called in consultation. The patient had brightened up somewhat and suffered less, after a few hours' rest in bed. The usual signs of brain abscess, stupor, slow pulse, vomiting, choked disks were wanting; nor were the symptoms those of general meningitis. The pain as well as the tenderness was most marked in the frontal and temporal regions. The father desired delay to await more definite assurance of trouble other than facial neuralgia. An immediate exploratory craniotomy was, however, urged on the grounds that an extra-dural abscess likely existed, from which a fatal meningitis might rapidly ensue.

The history of the case up to this time is detailed as accurately as possible in order to show the somewhat confusing and disquieting nature of the symtom complex.

Operation was performed July 6th, 1906, at the Good Samaritan Hospital.

A complete radical mastoid was done. The mastoid cavity was cleared of scar tissue down to the inner bony table and the lateral sinus. The tympanic cavity and some far forward zygomatic cells contained granulations (drainage had evidently been backward through the aditus, permitting the perforation in the drum membrane to heal). The cavity was dried and under a strong light a careful search was made for a fistula leading into the cranial cavity. None was found. The bony table was everywhere hard and firm. The inner table of the middle cranial fossa was next chiseled through above the antrum, fluid pus at once escaping, under pressure. The bony table was further removed to the extent of about two inches, exposing a large epidural abscess on the under and outer surface of the temporo-sphenoidal lobe. The dura was thick and covered with purulent granulations. The removal of bone was stopped when less diseased dura was reached. Diseased zygomatic cells were removed above and anterior to the tympanic cavity. It was suggested that the intracranial trouble may have spreal from this source of infection rather than from the mastoid. The dura was evidently sealed to the brain itself. There

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